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10/526,335	11/16/2005	Tim Cheeseright	DYOUNP0287US	8953

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EXAMINER
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AGRAWAL, RITESH

ART UNIT	PAPER NUMBER
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1631

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/526,335	<b>Applicant(s)</b> CHEESERIGHT ET AL.	
	<b>Examiner</b> Ritesh Agrawal	<b>Art Unit</b> 1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 05 March 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/5/07</u> . | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. Applicants' amendment and request for reconsideration in the communication filed on 3/05/07 are acknowledged and the amendments entered.

Claims 1-16 are currently pending and under consideration.

#### ***Withdrawn Rejections***

2. The rejection of claims 3 and 6-10 under 35 U.S.C. 112, 2<sup>nd</sup> paragraph, an indefiniteness rejection, is withdrawn in light of applicants' amendment filed 3/5/07.

The rejection of claims 3-5 and 9 under 35 U.S.C. 103(a) as being obvious over the combination of Ashworth and Mestres is withdrawn in light of applicants' amendments filed 3/5/07 and arguments (remarks, page 12, 3<sup>rd</sup> paragraph).

#### ***Information Disclosure Statement***

3. The Information Disclosure Statement filed 3/5/07 has been entered and considered. Initialed copies of the form PTO-1449 are enclosed with this action.

#### ***Claim Rejections - 35 USC § 101***

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-16 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The following analysis of facts of this particular patent application follows the analysis suggested in the "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility"<sup>1</sup>. Note that the text of the Guidelines is italicized.

To satisfy section 101 requirements, the claim must be for a practical application of the § 101 judicial exception, which can be identified in various ways (Guidelines, p. 19):

- The claimed invention "transforms" an article or physical object to a different state or thing.
- The claimed invention otherwise produces a useful, concrete and tangible result, based on the factors discussed below.

In the instant case, the claimed invention does not "transform" an article or physical object to a different state or thing it merely carries out molecular comparisons of molecules within a computer. This does not preclude the subject matter to be patentable as, for eligibility analysis, as

*physical transformation "is not an invariable requirement, but merely one example of how a mathematical algorithm [or law of nature] may bring about a useful application." AT&T, 172 F.3d at 1358-59, 50 USPQ2d at 1452. If the examiner determines that the claim does not entail the transformation of an article, then the examiner shall review the claim to determine if the claim provides a practical application that produces a useful, tangible and concrete result. In determining whether the claim is for a "practical application," the focus is not on whether the steps taken to achieve a particular result are useful, tangible and concrete, but rather that the final result achieved by the claimed invention is "useful, tangible and concrete." The claim must be examined to see if it includes anything more than a § 101 judicial exception. If the claim is directed to a practical application of the § 101 judicial*

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<sup>1</sup> Available at [http://www.uspto.gov/web/offices/pac/dapp/opla/preognotice/guidelines101\\_20051026.pdf](http://www.uspto.gov/web/offices/pac/dapp/opla/preognotice/guidelines101_20051026.pdf)

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*exception producing a result tied to the physical world that does not preempt the judicial exception, then the claim meets the statutory requirement of 35 U.S.C. § 101. If the examiner does not find such a practical application, the examiner has determined that the claim is nonstatutory. (Guidelines, p. 20)*

The question is thus whether the final result achieved by the claimed invention satisfies all three criteria of being useful, and concrete, and tangible.

Furthermore, the useful, tangible, and concrete result must be recited in the claim itself, rather than addressed in specification.

(2) **"TANGIBLE RESULT"** The tangible requirement does not necessarily mean that a claim must either be tied to a particular machine or apparatus or must operate to change articles or materials to a different state or thing. However, the tangible requirement does require that the claim must recite more than a § 101 judicial exception, in that the process claim must set forth a practical application of that § 101 judicial exception to produce a real-world result. The opposite meaning of "tangible" is "abstract."

The instant claims are drawn to computational means for comparing molecules using field points. However, as claimed, the method does not produce a tangible result. For example, the method as claimed may take place entirely within the confines of a computer or a human mind without any communication to the outside world and without using or making available for use the results of the molecular comparisons. Thus, the instant claims do not produce any tangible result. Furthermore, in relation to claims 13-16, the simple placement of non-statutory descriptive material on a computer-interpretable medium or in a computer does not make it statutory.

Thus, the final result achieved by the claimed invention does not satisfy all three criteria of being useful, and concrete, and tangible.

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Additionally, claims 13-16 are drawn to computer interpretable media containing instructions for carrying out the process of claim 1. At least one embodiment of such instructions could be non-functional descriptive material.

This rejection is maintained from the previous Office action. Applicants' arguments have been fully considered, but they are not found persuasive. Applicants argue:

The score provided by the method of claim 1 is useful in several contexts (remarks, page 8, 6<sup>th</sup> paragraph).

As argued in the previous Office action, there is no indication within the claims for the "providing" of a score as suggested by applicants. Applicants then continue by arguing several potential uses of the score (remarks, pages 8-9, points 1-3) as well as comparing their methodology with previous case law. With respect to these further arguments, as cited in the guidelines, the *claim* must either provide for a physical transformation or set forth a practical application. While applicants' method may be used in the applications set out in applicants' arguments, there is no recitation of such usage in the claims, per se, nor are there any claim elements that, as in applicants' cited case law, are necessarily associated with a real world object. Furthermore, with respect to applicants' *State Street* analogy (remarks, page 9, 6<sup>th</sup> paragraph), applicants' claims do not contain any language that suggest "recoding" or momentary "fixation" of a score value. Nor is applicants' claimed score value associated with a real world value such as a share price.

With respect to claims 13-16, as noted in *State Street*, the statutory category of the claimed subject matter is not relevant to a determination of whether the claimed subject matter produces a useful, concrete, and tangible result:

The question of whether a claim encompasses statutory subject matter should not focus on *which* of the four categories of subject matter a claim is directed to 9-- process, machine, manufacture, or composition of matter--but rather on the essential characteristics of the subject matter, in particular, its practical utility.

The essential characteristics of the media and apparatus are their relation to the claimed method. Since the method is non-statutory, so too are the media and apparatus related thereto. Furthermore, applicants' own citation from the MPEP clarifies that the computer readable medium is statutory when it "defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized," (remarks, page 9, last paragraph). Applicants claims are drawn to media "bearing a set of instructions for carrying out the process of claim 1" (for example, see claim 13). There is no indication that the media actually contain a program or code that is executed by a computer. As argued previously, the media can thus reasonably be interpreted to encompass non-functional descriptive material. The "set of instructions" could be a "set of instructions" to a user, not a set of computer *executable* instructions as is required.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1, 2, 6, 7, 8, 10, 11, 12, and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ashworth (IDS, GB Patent Publication # 2,317,030, March 11<sup>th</sup>, 1998). This rejection is modified from the previous Office action.

The claims are drawn to a method of comparing molecules comprising:

A) Providing field points of a first molecule,



B) Determining, at the position of the field points of a first molecule, the field of a second molecule to obtain field points for a second molecule,

C) Combining the information from (A) and (B) to obtain a score indicating similarity.

Ashworth discloses a method of determining field points for a molecule (abstract).

Ashworth discloses the ability to obtain field points for a molecule in relation to the field points of another molecule (page 4, lines 21-26). Furthermore, Ashworth discloses that one can determine a similarity score by comparing field points of a first and second molecule (page 8, lines 4-7). While Ashworth discloses a method for obtaining field points of a molecule in relation to another (as cited above), Ashworth does not specifically apply this method when comparing molecules to determine a similarity score.

With respect to claim 2, Ashworth discloses that the information associated with field points includes the position and size and extent. Furthermore, Ashworth discloses the use of equations in Vinter et al. (IDS, Journal of Computer Aided Molecular Design, Vol. 9, Pages 297-307) for calculations (page 10, lines 7-11) which applicant's specification details represent a field definition formula (page 12, lines 7-10).

With respect to claim 6, as referenced above, Ashworth discloses the use of the equations of Vinter et al. for the comparisons. Applicant discloses the equation used for comparison by Vinter et al. (specification, page 6, line 4) where the equation is taking the product of field point values (top line) which, as disclosed by Ashworth (as referenced above), consider size/extent and position.

With respect to claim 7, with the requirement for determining an aggregate score calculation, Ashworth discloses aggregate averaging (abstract, lines 10-11).

With respect to claims 8, and 10, they represent the limitations of claim 7 as applied in conjunction with claims 2 and 6, respectively. Since Ashworth discloses the limitations of claims 2 and 6 (as referenced above) and Ashworth is using an analogous method on the various molecules used to reach an aggregate value, Ashworth discloses the limitations of claims 8 and 10.

With respect to claim 11, since, as disclosed by Ashworth, the field size value is a value taken into account in defining the field point (as referenced above) and the field point values are energy values (measurement of energy extrema, for example, see Vinter et al., abstract), the field size values under consideration by Ashworth et al. represent energy values.

With respect to claim 12, Ashworth discloses the use of positive or negative maxima (abstract, line 4), wherein applicant's definition of minima is negative maxima (specification, page 7, lines 18-19).

With respect to claims 13-16, Ashworth discloses a computer apparatus for carrying out the method (page 8, lines 19-23). Ashworth's disclosure of such an apparatus necessarily discloses a computer-interpretable medium with the method since the computer couldn't execute the method unless the computer had the method on a computer-interpretable medium.

It would have been obvious to one of ordinary skill in the art, at the time the invention was made to modify Ashworth's method to determine the similarity score

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between sets of molecules by determining a second molecules field points in relation to that of the first molecule. One of ordinary skill in the art would have been motivated to do so, because, as suggested by Ashworth, one would expect changes in the field of a molecule relative to another molecule (page 4, lines 5-8). Hence, by determining a molecule's field points relative to another molecule, one would have a more accurate represent of the expected field.

This rejection has been modified from the previous Office action. Applicants' arguments were found persuasive to the extent that the Ashworth reference makes obvious but does not anticipate the invention.

Applicants argue:

That is, Ashworth discloses independently obtaining the field points of the first and second molecules (steps A and B of Ashworth) and then combining to calculate a score (step C of Ashworth). This is to be contrasted with a method where the field points of the second molecule are computed in step B with reference to the positions of the field points of the first molecule in step A. The score computation in step C of claim 1 thus necessarily also differs from Ashworth, since it pre-supposes completion of novel step B (remarks, page 11, 2<sup>nd</sup> paragraph).

Thus applicants' argue that the difference between their method and that of Ashworth is that the field points of the compared molecules are independently identified. However, as argued above, Ashworth discloses a method for identifying the field points of a pharmacophore that comprises determining the field points of the pharmacophore based upon field points of other molecules. Applicants themselves point to the fact that Ashworth's pharmacophore represents field points of other molecules:

Ashworth discloses developing a pharmacophore or field pattern (he used the two terms interchangeably (page 5, lines 12-15, page 6, lines 23-24). This consists of the field points from one or more molecules (remarks, page 10, 5<sup>th</sup> paragraph).

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Thus, given that Ashworth discloses a method for determining field points for a molecule that is dependent upon the field points for other molecules, and discloses that one expects to see perturbations in the field of a molecule when brought near that of another molecule (as cited above), it would have been obvious to use Ashworth's method for determining field points of a molecule in relation to other molecules when carrying out the comparison of molecules.

### ***Conclusion***

6. No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ritesh Agrawal whose telephone number is (571) 272-2906. The examiner can normally be reached on 8:30 AM - 5:00 PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla can be reached on 571-272-0735. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ritesh Agrawal, PhD RA

*John S. Brusca 8 May 2007*  
JOHN S. BRUSCA, PH.D  
PRIMARY EXAMINER